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## ARAC ESHWG REPORT 25.1353(d)

### **1 - What is underlying safety issue addressed by the FAR/JAR?**

The rule gives design requirements relating to the installation of aircraft electrical wiring. All wire and equipment installations must provide for continuous fault protection against fire and smoke hazards, there must be permanent cable, connector and terminal identification and the risk of mechanical, fluid, heat or vapor damage must be minimized.

### **2 - What are the current FAR and JAR standards?**

#### Current FAR text:

There is no current FAR rules text.

#### Current JAR text:

#### **JAR 25.1353(d)**

(d) Electrical cables and cable installations must be designed and installed as follows:

- (1) The electrical cables used must be compatible with the circuit protection devices required by JAR 25.1357, such that a fire or smoke hazard cannot be created under temporary or continuous fault conditions.
- (2) Means of permanent identification must be provided for electrical cables, connectors and terminals.
- (3) Electrical cables must be installed such that the risk of mechanical damage and/or damage caused by fluids, vapors or sources of heat, is minimized.

### **3 - What are the differences in the standards and what do these differences result in?**

JAR 25.1353(d) provides very explicit aircraft installation design requirements for electrical cables.

FAR 25.1353(a), (b) and (c) does not address these design features.

### **4 - What, if any, are the differences in the means of compliance?**

The JAR states specific requirements for cable installations that must be met. Installation designs approved by the FAR's typically meet the JAR requirement. Installation designers through experience have adopted the practice of permanent identification, protection and installation routing to minimize the risk of damage to electrical cables.

### **5 - What is the proposed action?**

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Adoption of JAR 25.1353(d) in its entirety is recommended. This requires an appropriate design action to be taken, removes the possibility that a designer may not consider a critical installation design condition and is in line with current best design practices.

### **6 - What should the harmonized standard be?**

Electrical cables and cable installations must be designed and installed as follows:

- (1) The electrical cables used must be compatible with the circuit protection devices required by FAR/JAR 25.1357, such that a fire or smoke hazard cannot be created under temporary or continuous fault conditions.
- (2) Means of permanent identification must be provided for electrical cables, connectors and terminals.
- (3) Electrical cables must be installed such that the risk of mechanical damage and/or damage caused by fluids, vapors or sources of heat, is minimized.

### **7 - How does this proposed standard address the underlying safety issue (identified under #1)?**

As mentioned in 5 above, the proposal clarifies the cable design requirements ensuring that the designer considers the critical conditions, routings and markings of a proper installation.

### **8 - Relative to the current FAR, does the proposed standard increase, decrease, or maintain the same level of safety? Explain.**

As Installation designs approved by the FAR's typically meet the JAR requirement the level of safety is maintained.

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### **9 - Relative to current industry practice, does the proposed standard increase, decrease, or maintain the same level of safety? Explain.**

As Installation designs in current industry practice typically meet the JAR requirement, the level of safety is maintained.

### **10 - What other options have been considered and why were they not selected?**

Since no equivalent FAR exists, the JAR is proposed for adoption.

**11 - Who would be affected by the proposed change?**

The proposal is in line with current design practices and the effect of the change is considered to be minimal for Aircraft Operators, Modification Centers, Service Centers and Manufacturers.

**12 - To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) needs to be included in the rule text or preamble?**

None.

**13 - Is existing FAA advisory material adequate? If not, what advisory material should be adopted?**

The rule is self-explanatory and is supported by a variety of part 25 section rules. Therefore it does not require advisory material.

**14 - How does the proposed standard compare to the current ICAO standard?**

This proposal is in line with ICAO Annex 8 Chapter 8 Electrical Systems.

**15 - Does the proposed standard affect other HWG's?**

This proposal does not affect other HWG's.

**16 - What is the cost impact of complying with the proposed standard?**

As the proposal is in line with current design practices the cost impact will be negligible.

**17 - Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?**

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Yes.

**18 - In light of the information provided in this report, does the HWG consider that the "Fast Track" process is appropriate for this rulemaking project, or is the project too complex or controversial for the Fast Track Process. Explain.**

The ESHWG considers that the fast track harmonization process is appropriate for this proposed rule.

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